

**REMARKS**

Claims 1-7, 14-16, 18-20, 22-24, 26-27, 29-31, 39 and 43 are pending in this application; claim 3 has been canceled to further prosecution of the application. Claim 32 has been withdrawn. No new matter has been added. Applicants reserve the right to pursue the original claims and other claims in this and other applications.

Claim 3 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply to comply with the written description requirement. Applicants have canceled claim 3 to obviate the rejection and further prosecution of the application.

Claims 1-6, 14-15, 18-20, 22-23, 26-27 and 29-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0057468 (“Segawa”) in view of U.S. Patent Publication No. 2002/0145676 (“Kuno”). This rejection is respectfully traversed.

Claim 1 recites a microelectronic imager, comprising “an imaging unit including a microelectronic die with an image sensor and a first referencing element fixed to the imaging unit; and an optics unit having an optic member and a second referencing element fixed to the optics unit, the second referencing element being seated and in direct contact with the first referencing element at a fixed, preset position in which the optic member is situated at a desired location relative to the image sensor.”

As best understood by Applicants, Segawa relates to an image pickup apparatus. The Office Action states that Segawa discloses “an imaging unit including a microelectric die with an image sensor, ... a first referencing element fixed to the imaging unit, ... an optics unit having an optic member and a second referencing element fixed to the optics unit, the second referencing element being seated with the first referencing element at a fixed, preset position in which the optic member is situated at a desired location relative to the image sensor.” (Office Action, pages 5-6). The Office Action also states that Segawa fails to disclose that the “first referencing element and the second referencing element are in direct contact.” (Office Action, page 6). The Office Action relies upon Kuno to disclose this limitation and states that Kuno discloses “an image pickup apparatus,

where first referencing element (element 21 in Fig. 7) is in direct contact with the second referencing element (element 23 in Fig. 7).” (Office Action, page 6). The Office Action then concludes that it would have been obvious to combine the image pickup apparatus of Segawa with the image pickup apparatus of Kuno. Applicants respectfully submit that one of ordinary skill in the art would not be motivated to combine the image pickup apparatus of Segawa with that of Kuno.

To the contrary of the Office Action’s contentions, Segawa teaches away from the prior art image sensor disclosed in Kuno Figure 7. Segawa teaches that a conventional image pickup apparatus as disclosed in Kuno Figure 7 can be difficult to produce and result in a larger imager. (Segawa, ¶ [0008]-[0009]). Segawa further explains that in a conventional imager such as the one disclosed in Kuno Figure 7, “chip components or the like forming part of a camera module must be mounted in the outside of [the camera module] limiting the downsizing.” (Segawa, ¶ [0008]). Furthermore, Segawa teaches that conventional imagers as disclosed in Kuno Figure 7 require “a soldering time of several ten seconds ... and causes difficulties in improvement of production ability.” (Segawa, ¶ [0009]). To combat these problems, Segawa teaches an image sensor in which no such soldering is needed for the electrical connections. Segawa teaches that by avoiding the need to connect the image sensor by soldering, “the photoelectric conversion element 7 can be electrically connected very easily in a short time to the module board 1 to which the optical system having lens 5, the chip component, and the like are reflow-connected, by **mechanical** press-contact based on the socket part 19 of the lens holder 13 and the spring electrodes 15 of the connector 12.” (Segawa, ¶ [0049] (emphasis added)).

Moreover, the image sensor of Segawa is electrically connected by a lens holder “which presses the external connection terminal against the electrode part.” (Segawa, ¶ [0011]). That is, Segawa teaches that the second referencing element must contact a portion of the electrical circuitry of the image sensor in order to complete the electrical connections for the image sensor. In fact, Segawa teaches that the “opening of the [second referencing element 13] is engaged with the connector 12 through an area of flexible board 8 including the external terminals of the flexible board 8. By this engagement[,] ... the pressing part 19a presses the connection terminal 8b of the flexible board against the spring electrodes of the connector 12 ... ensur[ing] electrical conduction

between the board 8 and the connector 12.” (Segawa, ¶ [0036]). In other words, for the imaging apparatus of Segawa to function, the second referencing element must be in contact with the flexible board 8 and not the first referencing element. Therefore, one of ordinary skill would not be motivated to combine the imaging apparatuses of Segawa and Kuno as Segawa teaches against combination with the typical image sensor disclosed by Kuno Figure 7.

As one of ordinary skill in the art would not have been motivated to combine Segawa with Kuno, the alleged Segawa/Kuno combination is improper and fails to render claim 1 obvious. Claims 2-6 depend from claim 1 and are allowable over Segawa in view of Kuno for at least the reasons mentioned above with respect to claim 1 and on their own merits. Claim 18 contains limitations similar to those of claim 1 and is allowable over Segawa in view of Kuno for at least the reasons mentioned above with respect to claim 1 and on its own merits. Claims 19-20 and 22-23 depend from claim 18 and are allowable over Segawa in view of Kuno for at least the reasons mentioned above with respect to claim 18 and on their own merits.

Claim 14 recites a microelectronic imager comprising “a microelectronic die having an image sensor and a plurality of contacts electrically coupled to the image sensor; a first referencing element fixed relative to the die, the first referencing element having a first alignment component at a lateral distance from the image sensor and a first stop component spaced apart from the image sensor along an axis normal to the image sensor by separation distance; an optics unit having an optic member; and a second referencing element connected to the optics unit, the second referencing element having a second alignment component engaged with the first alignment component to align the optic member with the image sensor and a second stop component engaged with the first stop component to space the optic member apart from the image sensor by a desired distance.”

The Office Action relies on Segawa to disclose each and every element of claim 14. (Office Action, page 11). Applicants respectfully disagree with the Office Action’s characterization of Segawa. In particular, Applicants disagree with the Office Action’s characterization of the first and second stop components of Segawa. In this regard, the Office Action states that Segawa teaches a “first referencing element (element 12a in Fig. 2), the first referencing element having a first

alignment component (element 12a in Fig. 2) ... and a first stop component (element 8b in Fig. 2).” (Office Action, page 11). The Office Action further relies on Segawa to teach “a second referencing element (element 18 in Fig. 2) connected to the optics unit (the upper part in Fig. 4), the second referencing element having a second alignment component (element 15 in Fig. 2) engaged with the first alignment component (element 12a in Fig. 4).” (Office Action, page 11). The Office Action refers to element 15, which is formed around connector (12) as the “second referencing element connected to the optics unit” of Segawa, as recited by claim 14. However, element 15 is a **spring** electrode and connected to neither the first nor second referencing element of Segawa. (Segawa, ¶ [0036]). Therefore, element 15 is incapable of being “a second referencing element connected to the optics unit” as recited by claim 14.

Moreover, Segawa teaches that the “opening of the [optics unit] 19 is engaged with the connector 12 through an area of flexible board 8 including the external connection terminals of the flexible board 8 ... [and that] by this engagement, the flexible board is deformed along the outer shape of the connector 12.” (Segawa, ¶ [0036]). “The pressing part 19a [of the optics unit] presses the connection terminal 8b of the flexible board 8 against the spring electrodes 15 of the connector 12.” *Id.* That is, Segawa teaches that at least a spring electrode and a flexible board prevent the first and second alignment component from engaging with each other. These two elements, by their nature, are flexible and deformable and incapable of providing a precise alignment between the optics unit and image sensor. Accordingly, Segawa fails to disclose, teach or suggest a microelectronic imager, comprising “a first referencing element fixed relative to the die, the first referencing element having a first alignment component ... and a second referencing element connected to the optics unit, the second referencing element having a second alignment component engaged with the first alignment component to align the optic member with the image sensor and a second stop component engaged with the first stop component to space the optic member apart from the image sensor by a desired distance” as recited by claim 14.

Claim 15 depends from claim 14 and is allowable over Segawa in view of Kuno for at least the reasons mentioned above with respect to claim 14 and on its own merits. Claim 26 contains limitations similar to those of claim 14 and is allowable over Segawa in view of Kuno for at least

the reasons mentioned above with respect to claim 14 and on its own merits. Claims 27 and 29-30 depend from claim 26 and are allowable over Segawa in view of Kuno for at least the reasons mentioned above with respect to claim 26 and on their own merits. Applicants respectfully request that the rejection be withdrawn and the claims allowed.

Claims 7, 16, 24 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Segawa in view of Kuno and U.S. Patent No. 5,861,654 ("Johnson"). This rejection is respectfully traversed.

Claim 7 depends from claim 1, claim 24 depends from claim 18 and claim 31 depends from claim 26 and are allowable for at least the reasons mentioned above with respect to claims 1, 18 and 26, respectively. Johnson is relied upon as teaching an image sensing assembly with a "first step and [a] second step, where the second step is mated with the first step." (Office Action, page 15). Applicants respectfully submit that Johnson fails to cure the deficiencies of the alleged Segawa and Kuno combination. That is, Johnson also fails to teach a microelectronic imager, comprising "an imaging unit including a microelectronic die with an image sensor and a first referencing element fixed to the imaging unit; and an optics unit having an optic member and a second referencing element fixed to the optics unit, the second referencing element being seated and in direct contact with the first referencing element at a fixed, preset position in which the optic member is situated at a desired location relative to the image sensor" as recited by claim 1 and similarly recited by claims 18 and 26.

Claim 16 depends from claim 14 and is allowable for at least the reasons mentioned above with respect to claim 14. Johnson is relied upon as teaching an image sensing assembly where "the first step and second step are fitted together." (Office Action, page 16). Applicants respectfully submit that Johnson fails to cure the deficiencies of the Segawa and Kuno combination. That is, Johnson also fails to teach a microelectronic imager, comprising "a microelectronic die having an image sensor and a plurality of contacts electrically coupled to the image sensor; a first referencing element fixed relative to the die, the first referencing element having a first alignment component at a lateral distance from the image sensor and a first stop component spaced apart from the image

sensor along an axis normal to the image sensor by separation distance; an optics unit having an optic member; and a second referencing element connected to the optics unit, the second referencing element having a second alignment component engaged with the first alignment component to align the optic member with the image sensor and a second stop component engaged with the first stop component to space the optic member apart from the image sensor by a desired distance” as recited by claim 14. Applicants respectfully request that the rejection be withdrawn and the claims allowed.

Claims 39 and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Segawa in view Johnson. This rejection is respectfully traversed.

Claim 39 contains limitations similar to those of claim 14. Johnson is relied upon as teaching “an image sensing assembly, where packaging an imager.” (Office Action, page 18). Applicants respectfully submit that Johnson fails to cure the deficiencies of Segawa. That is, Johnson also fails to teach a microelectronic imager, comprising “a first referencing element fixed relative to the die, the first referencing element having a first alignment component ... and a second referencing element connected to the optics unit, the second referencing element having a second alignment component engaged with the first alignment component to align the optic member with the image sensor and a second stop component engaged with the first stop component to space the optic member apart from the image sensor by a desired distance” as recited by claim 14 and similarly recited by claim 39.

Claim 43 depends from claim 39 and is allowable for at least the reasons mentioned above with respect to claim 39 and on its own merits. Applicants respectfully request that the rejection be withdrawn and the claims allowed.

In view of the above, Applicants believe the pending application is in condition for allowance.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1073, under Order No. M4065.1286/P1286.

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